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Docket No.: 17214/012001
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Tatsuo Nakajima et al.

Patent No.: 7,534,045

Issued: May 19, 2009

For: BEARING WITH IC TAG AND SEAL FOR
THE SAME

**REQUEST FOR CERTIFICATE OF CORRECTION
PURSUANT TO 37 CFR 1.322**

Attention: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**Certificate
JUL 09 2009
of Correction**

Dear Madam:

Upon reviewing the above-identified patent, Patentee noted a typographical error which should be corrected.

In the Claims:

In Claim 4, column 8, line 45, the word "fining" should read --fitting--.

The error was not in the application as filed by applicants; accordingly no fee is required.

Transmitted herewith is a proposed Certificate of Correction effecting such amendment. Also enclosed, as evidence of the error, is a copy of the Claims as issued, and a copy of the Claims as allowed. Patentee respectfully solicits the granting of the requested Certificate of Correction.

Patent No.: 7,534,045

Docket No.: 17214/012001

Applicants believe no fee is due with this request. However, if a fee is due, please charge our Deposit Account No. 50-0591, under Order No. 17214/012001.

Dated: June 29, 2009

Respectfully submitted,

By 

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AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) An IC-tagged bearing device, ~~which includes~~ comprising:

a sealing member ~~including~~ comprising:

a core metal; ~~provided with~~

an elastic element that is made of rubber or resin disposed on the core metal; and


an IC tag embedded in the elastic element,

~~which~~ wherein the sealing member seals a bearing space, delimited between raceway members,

~~in which an~~ wherein the IC tag is capable of performing communication on a non-contact basis, ~~is held as embedded in the elastic element~~

wherein the IC tag is a cylinder, and arranged such that a longitudinal axis of the cylinder is outside the raceway members.

2. (Original) The IC-tagged bearing device as claimed in claim 1, wherein the elastic element is made of the rubber and the IC tag is fixedly bonded by vulcanization to the elastic element.
3. (Original) The IC-tagged bearing device as claimed in claim 1, wherein the core metal is provided with an IC tag positioning hole and a portion of the IC tag is engaged in this IC tag positioning hole.

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4. (Original) The IC-tagged bearing device as claimed in claim 1, wherein the elastic element is provided with an IC tag fitting groove and the IC tag is fitted in the form as engaged in this IC tag fitting groove.
5. (Currently Amended) An IC-tagged sealing member for sealing a bearing space delimited between raceway members in a bearing device ~~as defined in claim 1, which member includes~~ comprising:
- a core metal ~~provided with~~
- an elastic element that is made of rubber or resin disposed on the core metal; and
- an IC tag embedded in the elastic element, capable of performing communication on a non-contact basis ~~held as embedded in the elastic element~~
- wherein the IC tag is a cylinder, and arranged such that a longitudinal axis of the cylinder is outside the raceway members.
6. (Original) The IC-tagged sealing member as claimed in claim 5, wherein the elastic element is made of the rubber and the IC tag is fixedly bonded by vulcanization to the elastic element.
7. (Original) The IC-tagged sealing member in claim 5, wherein the elastic element is provided with an IC tag fitting groove and the IC tag is fitted in the form as engaged in this IC tag fitting groove.

been molded to a shape provided with the IC tag fitting groove 21, the IC tag 9 is fitted to the sealing member 5 in a fashion engaged in the IC tag fitting groove 21. In such case, it is preferable that the IC tag 9 is fixed to an inner surface of the IC tag fitting groove 21 by the use of a bonding material.

The IC tag fitting groove 21 is formed by molding so that an enclosing wall 22 can be formed in the elastic element 7 in the form as protruding therefrom at a front surface side of the sealing member 6 with respect to the core metal 6. In other words, the enclosing wall 22 has an inner space defining the IC tag fitting groove 21. The enclosing wall 22 is of a rectangular frame shape and provided parallel to the tangential line extending in a direction circumferentially of the sealing member 5. For this reason, as best shown in FIGS. 7A and 7B showing cross-sectional views taken along the lines VIIA-VIIA' and VIIB-VIIB' in FIG. 6, depending on the position circumferentially of the sealing member 5, the enclosing wall 22 has different positions radially of the core metal 6. FIG. 7C illustrates a portion of the sealing member 5 where the IC tag 9 is not positioned. That portion of the sealing member 5, where the IC tag 9 is not positioned, has a sectional shape similar to that in the previously described first embodiment. As is the case with that in the previously described first embodiment, the IC tag 9 employed in the second embodiment has an outer appearance representing a cylindrical shape.

The sealing member 5 is manufactured by a method including the following steps (1) to (6):

- (1) The core metal 6 is arranged on a mold surface of a lower mold (not shown) provided with a cavity.
- (2) A vulcanization bonding agent is applied to respective entire surfaces of the core metal 6 which are to be bonded with rubber.
- (3) An unvulcanized rubber sheet is placed on the mold surface of the lower mold.
- (4) An upper mold (not shown) is then lowered so that the upper mold and the lower molds are clamped together under pressure, and this condition is maintained for a predetermined length of time enough to allow vulcanization of the rubber to take place.
- (5) The mold assembly is opened and the resultant produce, that is, the sealing member 5 is removed therefrom.
- (6) After the bonding agent is injected into the IC tag fitting groove 21 defined in the sealing member 5, the IC tag 9 is inserted to fix.

According to the second embodiment as hereinabove described, a major portion of the IC tag 9 except for a front surface portion thereof is held embedded in the elastic element 7 and, accordingly, the IC tag 9 can be protected from the external environment. Also, since the IC tag fitting groove 21 is defined and the IC tag 9 is then engaged therein, the IC tag 9 can further easily be fitted to the sealing member 5. Yet, the bonding agent can be easily and precisely injected into the IC tag fitting groove 21 accommodating therein the IC tag 9 and, therefore, a solid bonding force can be exerted stably. In addition, unlike the case in which the IC tag 9 is fitted using a bonding by vulcanization technique, thermal stresses which occur during the bonding by vulcanization can be avoided at the time the IC tag 9 is fixed.

As hereinbefore described, even when the IC tag 9 is fitted inside the groove 21, unlike the structure in which it is physically fixed by means of a caulking technique, no deformation is induced in the IC tag 9. Also, since the elastic element 7 made of the rubber or resin material and forming a part of the sealing member 5 exists around the IC tag 9, it is possible to protect the IC tag from the external environment of elevated temperature.

Other structural features of and effects derived from the second embodiment discussed above are similar to those afforded by the previously described first embodiment.

Although in describing any of the first and second embodiments of the present invention, reference has been made to the deep groove ball bearing, the present invention can be equally applied to any type of bearing equipped with the sealing member. By way of example, the present invention is equally applicable to a radial bearing such as, for example, a cylindrical roller bearing, a tapered roller bearing, self-aligning bearing, angular contact ball bearing and center bearing and also to a thrust bearing. Also, the present invention is equally applicable to any other special bearing such as, for example, a wheel support bearing for cars and for any special use. The IC-tagged bearing device according to the present invention may not necessarily be of a type including a pair of raceway members as an independent bearing, but may be of a type in which one of the inner and outer raceway members is omitted, but a shaft or a housing of a machine utilizing the bearing serves as the other of the raceway members.

What is claimed is:

1. An IC-tagged bearing device comprising:

a sealing member comprising:

a core metal;
an elastic element that is made of rubber or resin disposed on the core metal; and
an IC tag embedded in the elastic element,

wherein the sealing member seals a bearing space, delimited between raceway members,
wherein the IC tag is capable of performing communication on a non-contact basis,
wherein the IC tag is a cylinder, and arranged such that a longitudinal axis of the cylinder is outside the raceway members.

2. The IC-tagged bearing device as claimed in claim 1, wherein the elastic element is made of the rubber and the IC tag is fixedly bonded by vulcanization to the elastic element.

3. The IC-tagged bearing device as claimed in claim 1, wherein the core metal is provided with an IC tag positioning hole and a portion of the IC tag is engaged in this IC tag positioning hole.

4. The IC-tagged bearing device as claimed in claim 1, wherein the elastic element is provided with an IC tag fitting groove and the IC tag is fitted in the form as engaged in this IC tag fitting groove.

5. An IC-tagged sealing member for sealing a bearing space delimited between raceway members in a bearing device comprising:

a core metal
an elastic element that is made of rubber or resin disposed on the core metal; and

an IC tag embedded in the elastic element, capable of performing communication on a non-contact basis
wherein the IC tag is a cylinder, and arranged such that a longitudinal axis of the cylinder is outside the raceway members.

6. The IC-tagged sealing member as claimed in claim 5, wherein the elastic element is made of the rubber and the IC tag is fixedly bonded by vulcanization to the elastic element.

7. The IC-tagged sealing member in claim 5, wherein the elastic element is provided with an IC tag fitting groove and the IC tag is fitted in the form as engaged in this IC tag fitting groove.

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

Page 1 of 1

PATENT NO. : 7,534,045
APPLICATION NO. : 10/580,704
ISSUE DATE : May 19, 2009
INVENTOR(S) : Tatsuo Nakajima et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

In Claim 4, column 8, line 45, the word “fining” should read --fitting--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

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Application No. (if known): 10/580,704

Attorney Docket No.: 17214/012001

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Courtney J. Graves

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